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ABSTRACT

The Writing Across the Business Disciplines Project at Robert Morris College has had a profound effect on faculty from various disciplines who have taken part in the program since its inception in 1985. Each participant targets a specific course in his or her own field for intensive scrutiny and eventual re-design. During this process, faculty learn to use writing as a tool for accomplishing the goals of the course. This integration of writing-to-learn into the structure of course design is the most powerful feature of the Writing Across the Business Disciplines Program. In addition to the courses that were redesigned as part of the program, all new courses and courses that are up for periodic review must follow the guidelines developed by the project. The experiences of all those involved in the program shows clearly that integrating writing into well-conceived course designs produces a writing across the curriculum program with lasting, sustainable qualities. (An appendix presents two course plans based on the project guidelines.) (RS)

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A STRUCTURAL APPROACH TO INTEGRATING WRITE TO LEARN IN ALL DISCIPLINES

Donna J. Lund

The Writing Across the Business Disciplines Project at Robert Morris College has had a profound effect on faculty from various disciplines who have taken part in the program since its inception in 1985. Each participant targets a specific course in his or her field (accounting, marketing, economics and other business subjects) for intensive scrutiny and eventual re-design. During this process, faculty learn to use writing as a tool for accomplishing the goals of the course (meeting the learning objectives). This integration of writing-to-learn into the structure of course design is the most powerful feature of our Writing Across the Business Disciplines Program.

I was fortunate enough to be a participant in the Pilot Program at Robert Morris, led by Richard Young of Carnegie-Mellon University and Jo-Ann Sipple of Robert Morris College in the Spring of 1985. We had funding from the Buhl Foundation, enabling us to offer stipends of $2,000 to two representatives from each department who in turn gave the commitment of forty-five hours of intensive seminar work spread over the semester in three hour weekly meetings (like an intensive graduate course).

Once we had made a thorough examination of the educational goals for each course, using the educational principles of Bloom, Henderson, and Mager, we determined the most effective methods and materials to use in accomplishing these goals. Since I am a member of the Communications Department, you may not be surprised

to hear that I found writing to be my most effective tool for teaching in my target course, Executive Communication and Group Dynamics, a class based primarily on oral commmunication. You will probably be more impressed to learn how my colleagues in business departments also found writing to be a powerful means for accomplishing the educational objectives of their specific courses.

Today, March 1989, it may seem obvious that writing has the power to promote and enhance thinking and learning in every discipline. Zinnser's new book, Writing to Learn, is full of marvelous examples of clear writing produced by clear thinkers in an array of disciplines. But four years ago when our Writing Across the Business Disciplines (WABD) program began, most of our faculty thought of writing only as a tool for testing and evaluation. The idea of writing as a tool for thinking and learning was new and difficult to grasp.

Therefore, to begin our program, we had to establish the connection between writing and learning. We studied theoretical principles derived from relevant works of Janet Emig, Elaine Maimon, Toby Fulweiler and Richard Young:

1. Writing is a mode of learning; it has multiple uses beyond the merely transactional;
2. Each academic discipline , which shapes the writing of its practitioners, is driven by its own specialized procedures, conventions, and terminology--its own kind of interaction between writing and learning;
3. Writers can develop and apply defined sets of heuristics or

writing strategies to help them think more effectively about the subject matter of their disciplines.

4. Faculty can reinvision courses, integrating write-to-learn tasks to achieve course objectives.

To begin work on redesigning our target courses, Young asked us to examine all our assumptions: what are we teaching and why, which faculty members usually teach the course, who takes it, what are the objectives, the rationale, the kinds of assignments given, including writing (if any), and any recognized successes or problems with the present course. Considering the resources and limitations of the teacher and the college, Young asked us to look for unusual or unexpected opportunities presented by the course. Ultimately, we would learn to use writing to lessen the discrepancy between the present course and what we could envision as an ideal course.

Remember that participants in this seminar came from every department of the college. Most of us knew little or nothing about the subject matter, let alone the terminology of each other's disciplines. To provide us with a common language and allow us to share experiences and information, we all used the hierarchical system of educational goals described in Benjamin Bloom's Taxonomy of Educational Objectives, Book I, the Cognitive Domain.

The Taxonomy lists six basic terms for the mental states which are the intended outcomes of the educational process at work in our courses. The first level, KNOWLEDGE, refers to the recall of specific bits of information, such as specific facts,

terminology, conventions, trends and sequences, as well as principles and theories in the field. At this level, the emphasis is on remembering or bringing to mind the appropriate material. At the next level, COMPREHENSION, the individual can translate or paraphase material from one form of communication to another, as well as reorder, rearrange, and extrapolate. At the next level, APPLICATION, the student shows he can USE abstractions (rules, procedures, generalized methods) in concrete situations. ANALYSIS includes the ability to break down a communication into its constituent elements to make clear the relative hierarchy of ideas. SYNTHESIS is the putting together of elements or parts to constitute a pattern or structure not clearly there before. Finally, at the level of EVALUATION, the student is able to judge the value of materials or methods using standards of internal and external criteria.

The objectives in the higher orders make use of and are built on behaviors found in the preceding classes. By studying this range of possible objectives, from the simple to the very complex, we could discover any weaknesses or gaps in our present course goals. For example we might have too many goals at the level of recall or remembering, and then alter our plans to insure we are also requiring students to use higher level powers of analysis, synthesis, and evaluation. At these levels, we learned that memory is not adequate; only writing enables the students to engage in abstraction and higher order reasoning. This classification or taxonomy gave us a powerful tool for considering possible educational outcomes for our courses. It

helped us generate long lists of possible objectives (I started with fifteen for my course). We then chose the most important, based on the following considerations: 1) our previous experience, learning theory, and philosophy of education; (2) a study of our students and what they would need to know in their chosen professions, and (3)the nature of the subject matter.

Once we had defined our educational objectives for our target courses, we were ready to apply the course planning system proposed by Algo Henderson. From him we learned that it is NOT sufficient to simply accept models from previous department syllabi, replicate what we remember from our own undergraduate days, or simply follow the set of "topics" outlined on the content page of a textbook.

Instead, Henderson suggests that a well designed course can be laid out on a matrix or grid with educational objectives down one axle and content areas across the top. In true collaborative learning-style, WABD participants would meet in small groups to discuss just what we were being asked to do. Verbalizing the task for ourselves and others, and utilizing their examples and encouragement, we discovered together how we were to proceed.

Meeting in small groups and sharing our work-in-progress on our new course designs, the participants in the Writing Across the Disciplines Program were able to begin construction of matrices for each of our targeted courses. Appendix A shows the matrix prepared by my colleague, Richard Lesnak, for his course in Elementary College Algebra. Appendix B shows the matrix I completed for my course, Executive Communication and Group Dynamics. My educational objectives included increasing the students' power to speak, listen, lead, participate, and evaluate, in content areas which included the information group, the problem-solving group, and the professional presentation.

Once I had a clear vision of what I wanted to teach in the course, I was ready to write performance objectives for each individual cell in my matrix, using the guidelines set down by Robert Mager in PREPARING INSTRUCTIONAL OBJECTIVES.

Mager defines an OBJECTIVE as "a description of a performance you want learners to be able to exhibit before you consider them competent. It describes the intended RESULT of instruction rather than the PROCESS of Instruction itself." As Mager says, "If you know where you are going, you have a better chance of getting there." Well-written Performance Objectives, according to Mager, provide a sound basis for 1) selection or design of instructional content or procedures, 2) evaluation or assessment of the success of instruction, and 3) organizing the students' own efforts and activities for accomplishing important instructional intentions.

According to Mager, well-written objectives include the following:

1. PERFORMANCE-What the student must be able to DO.
   The Objective must answer the question "What is the learner DOING when demonstrating achievement of the objective? The behavior must be directly observable or directly assessible.
2. CONDITIONS-important conditions under which the performance is expected to occur.
3. CRITERIA-the quality or level of performance that will be considered acceptable (by the teacher or ultimately, by a professional in the field).

Written in this way, performance objectives can help a teacher find correspondences between the objectives of the course and the demands of the profession the student is preparing for. If students can understand and relate to clear objectives that enhance their own development, if they know what is expected of them and why, they will find their own motivation.

The content area of my target course, Executive Communication and Group Dynamics, requires oral communication in the form of informal group discussion, problem-solving panel, and symposium presentations. Yet, I found that the most efficient way to insure integration of theory with actual behavior was to employ writing tasks in each cell of my matrix, as shown in Appendix B.

The major vehicle for learning in my course is the Journal, the student's log book or record of all the verbal and non-verbal communication behavior experienced within the classroom and without. By recording his observations of what he has seen and heard, the student gathers an array of raw data to use when he

must organize, synthesize, and evaluate the group projects and individual performances, including his own!

I graded the journals at the end of the semester only on completeness. I looked for notes on chapters in the text, lectures, movies, observations of meetings of small groups outside of class, and on informal and formal class activities. The students could use the journals as sourcebooks for examinations. I did not expect them to memorize, but rather, asked them to synthesize theory presented in the text and in lectures with the real behavior they had observed throughout the semester. Writing the essay examinations as well as the formal evaluations helps students discover what they know and shows me what I have taught. But this synthesis is only possible when students can build on what they have recorded in the journal: their daily observing, summarizing, speculating, and questioning.

The completed matrix was my constant reference and guide in keeping track of the weeks and the activities I had planned. For the students' use, I constructed a detailed chronological syllabus with specific objectives, activities, and evaluation procedures for each week of the semester. Having worked out the matrix, I could employ in my course a purposeful redundancy, whereby the same basic objectives were addressed in increasingly demanding assignments and activities. I was in control of the sequence and organization of my course, able to act on Jerome Bruner's statement that "the sequence in which a learner encounters materials within a domain of knowledge affects the difficulty he will have in achieving mastery."

I have shown you how participating in WABD at Robert Morris affected my thinking and teaching in one specific course, Executive Communication and Group Dynamics. But this procedure is so powerful for me that I have since redesigned all the courses I teach using Henderson's Matrix, Bloom's Taxonomy, Mager's Objectives and integrated writing-to-learn. Participants outside the Communications Department were just as strongly convinced of the power of using writing as a tool for learning.

Dick Lesnak of the Mathematics Department has been one of the most articulate and eager advocates for writing across the curriculum. He has spoken at many colleges and is publishing an article on his use of writing-to-learn in his Elementary College Algebra Class. In his course plan for Elementary College Algebra (Appendix A) Lesnak shows how he requires math students to write rules, order of operations, procedural descriptions, problems in understanding, summaries of applications and other writing tasks, all designed to make students aware of what they are doing and why, so that they are empowered with the same knowledge as that of the teacher. As Zinnser notes in Writing to Learn in the chapter on Mathematics: "Writing frees students of the idea that math is a collection of right answers owned by the teacher." In evaluating the course at the end of the semester, Lesnak's students stated that writing out the procedures and writing about their own problems helped them overcome "Math Block," to organize thoughts rather than memorize numbers.

Another enthusiastic spokesman for the WABD Program at Robert Morris is Chris Stenberg, who redsigned his course in Cost

Accounting. The syllabus with which he began kept students at the application level and thus did not serve the real-world needs of accounting majors. Using the same topics of instruction as the original, Stenberg devised new statements of Course Objectives that are relevant and responsive to both the academic and professional needs of the students and the profession.

Stenberg says that he uses writing-to-learn to make the bridge between application and higher levels of reasoning and inquiry. By requiring students to define the problem and prepare lists of procedures that will solve the problem, he forces them to engage in the thinking process used by successful accounting practitioners. As he puts it, "Students must acquire the successful inquiry procedures of the expert accountant and can no longer rely on rote memorization. They must be able to explain both orally and in writing the reasons why they have offered a particular solution to a particular problem."

The evaluation of Robert Morris College's Writing Across the Business Disciplines Program prepared by members of the Board of Consultant Evaluators, Council of Writing Program Administators, resulted in the following observations:

1. Particularly noteworthy is the introdction of write-to-learn strategies as part of a larger review of course goals and structure by teachers in different disciplines.
2. Enthusiasm among participating teachers was unanimous; they feel they are better teachers because of the program.
3. A ripple effect is at work, with faculty who did not participate in training nevertheless beginning to rethink their

syllabuses and incorporate more writing activities into their courses.

The quality of academic life at Robert Morris College has been remarkably enhanced by the WABD Program. In addition to the courses that were re-designed as part of the program, all new courses and courses that are up for periodic review must follow WABD guidelines. Eventually, all courses taught at the college will have been redesigned following intense scrutiny of goals and methods, and incorporating writing-to-learn into all stages of course planning and development.

In 1989, the Writing Across the Business Disciplines Program continues at Robert Morris at a reduced cost with trained faculty serving as teachers and mentors for faculty new to the program. My experience, as well as that of my colleagues in the businesss disciplines, shows clearly that integrating writing into well conceived course designs produces a Writing Across the Curriculum Program with lasting, sustainable qualities.

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II. Course Plan, QS-100
Modern Elementary College Algebra

Topics / Instructional Objectives	From Arithmetic to Algebra (2 weeks)	Simplifying Algebraic Expressions (3 weeks)
Knowledge of basic algebraic computations for more advanced study of algebra.	- Discuss and have students write order of operations for all arithmetic problems. - Discuss and have students write procedures for evaluating expressions. - Discuss and have students write the rules for signed numbers.	- Discuss and have students write rules for addition of algebraic terms. - Discuss and have students write rules for multiplication of algebraic terms. - Discuss and have students write laws of exponents used in multiplication and division. - Define a radical and demonstrate the simplifying of a radical.
Ability to identify problems and select proper computational techniques.	- Identify the arithmetic operations in a multi-step problem. - Write the proper order of operations that apply to a problem before completing solution.	- Discuss importance of distinguishing multiplication from addition in the simplifying of algebraic expressions. - Have students write a detailed procedure for simplifying any and all algebraic expressions. - Test #1
Improvement in problem solving techniques and in the ability to think analytically.	- Illustrate that as number of steps increase, writing of step-by-step procedure helps in problem solving. - Have students attempt multi-step problems without writing and then with writing to judge improvement.	- Demonstrate and assign multi-step problems that are combinations of previously acquired basic algebraic skills. - Have students list the individual problems that make up the total problem before continuing to final solution. - Have students write the question a radical asks before simplifying.
Ability to analyze an incorrect solution for the purpose of determining the error in the solution.	- Present students with completed "incorrect" solutions and require a written description of the procedural error before the problem is redone correctly.	- Present students with completed "incorrect" solutions and require a written description of the procedural error before the problem is redone correctly.
Realization that algebra is the generalization of previously learned arithmetic.	- Demonstrate that order of operations does not change when numbers are replaced by letters in algebraic expressions. - Demonstrate that order of operations does not change when signed numbers are introduced into problems.	- Demonstrate that rules governing basic arithmetic operations of addition and multiplication do not change and are applied to letters as well as numbers in the simplification of algebraic expressions.
Awareness that problem solving techniques in basic algebra are applicable in future problem solving situations.	- Have students write correct order of operations for advanced algebra problems even though they cannot yet continue to a final solution.	- Discuss and demonstrate how simplifying algebraic expressions is a first step in future, more complex algebraic computations.
Increased confidence in one's ability to understand algebra and a desire to learn more.	- Re-assign multi-step problems presented on first day of class that most students could not do then, but can do now with the knowledge of order of operations.	- After going over test #1, have students write a summary of those computations they feel confident with and those that they do not yet fully understand. - Discuss students' comments before proceeding to next topic.

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Ability to identify problems and select proper computational techniques.	- Identify the arithmetic operations in a multi-step problem. - Write the proper order of operations that apply to a problem before completing solution.	- Discuss importance of distinguishing multiplication from addition in the simplifying of algebraic expressions. - Have students write a detailed procedure for simplifying any and all algebraic expressions. - Test #1
Improvement in problem solving techniques and in the ability to think analytically.	- Illustrate that as number of steps increase, writing of step-by-step procedure helps in problem solving. - Have students attempt multi-step problems without writing and then with writing to judge improvement.	- Demonstrate and assign multi-step problems that are combinations of previously acquired basic algebraic skills. - Have students list the individual problems that make up the total problem before continuing to final solution. - Have students write the question a radical asks before simplifying.
Ability to analyze an incorrect solution for the purpose of determining the error in the solution.	- Present students with completed "incorrect" solutions and require a written description of the procedural error before the problem is redone correctly.	- Present students with completed "incorrect" solutions and require a written description of the procedural error before the problem is redone correctly.
Realization that algebra is the generalization of previously learned arithmetic.	- Demonstrate that order of operations does not change when numbers are replaced by letters in algebraic expressions. - Demonstrate that order of operations does not change when signed numbers are introduced into problems.	- Demonstrate that rules governing basic arithmetic operations of addition and multiplication do not change and are applied to letters as well as numbers in the simplification of algebraic expressions.
Awareness that problem solving techniques in basic algebra are applicable in future problem solving situations.	- Have students write correct order of operations for advanced algebra problems even though they cannot yet continue to a final solution.	- Discuss and demonstrate how simplifying algebraic expressions is a first step in future, more complex algebraic computations.
Increased confidence in one's ability to understand algebra and a desire to learn more.	- Re-assign multi-step problems presented on first day of class that most students could not do then, but can do now with the knowledge of order of operations.	- After going over test #1, have students write a summary of those computations they feel confident with and those that they do not yet fully understand. - Discuss students' comments before proceeding to next topic.

B

COURSE PLAN, HC 310 - EXECUTIVE COMMUNICATIONS AND GROUP DYNAMICS

Topics (and numbers of meetings devoted to each) / Instructional Objectives	Introduction to Small Group Communication (2 weeks)	Information-sharing groups (3 weeks)
Increased ability to speak effectively and persuasively.	Students take part in ice-breaking activity. Students learn how to record dtailed obser-ations of communication behavior in their journals.	Students share information with other members of a small, leaderless discussion group. Students observe other groups, comment and ask questions.
Increased ability to listen with accuracy and skill.	Students of serve film, "Listening as Problem-Solving," formulate discussion questions, and participate in small group discussions of the film. Students take part in other-centered listening activity. Students record observations of listening behavior.	Students demonstrate good listening behavior as members of information sharing groups. Students demonstrate good listening skills as the audience for small group discussions. Record observations.
Increased ability to function in small groups as an involved participant.	Lecture/Discussion of Chapters 1,2,3,4 in text. Students write summaries and reactions in journals. Students keep a diary of all small groups participated in. Students take part in small group discussions of listening film. Students form groups for Project I.	Lecture/Discussion Chapters 5,6 in text. Summaries and reactions. Students demonstrate skill in participating in information sharing groups. Students record observations of participation of others. Form groups for Project I.
Increased ability to perform leadership functions.	Lecture/Discussion of Chapters 1,2,3,4 in text. Students write summaries and reactions in a journal. Students record observations of leadership in small group diaries.	Lecture/Discussion of Chapters 5,6 in text. Students experience group discussion with no designated leader. Students write observations in journal for use in written evaluation.
Increased ability to analyze and evaluate communication behavior, and to recommend improvements.	Students keep diaries of small groups participated in; note varying levels of satisfaction. Students complete survey of their own communication skills and experiences.	Students write full evaluations of their own group presentations. Students evaluate all groups in essay exam. Students view videotapes of Project I presentations.

Problem-Solving Groups (3 weeks)	Professionalism: Preparation for final presentation (3 weeks)	Final Presentations (4 weeks)
Students take part in Problem-Solving Group discussion before the class. Students observe other groups, comment and ask questions.	Students make informal oral reports of groups and leaders observed outside of class. Students observe professionalism of invited guest speakers. Students take part in impromptu speaking exercise.	Groups of four give 40 minute professional presentation. Must show excellence in dress, speech, use of visual aids, hand-outs, audience reaction. Students observe the professionalism of others in final presentations.
Students demonstrate good listening behavior as members of problem-solving groups. Students demonstrate good listening skills as members of the audience for problem-solving groups. Students record observations of listening behavior in other.	Students respond to class-rates reports of outside groups, record observations. Students respond to guest speakers, record important data.	Students demonstrate active listening and full control of non-verbal behavior while making presentation. Students demonstrate active, involved listening as audience for final presentation.
Lecture/Discussion. Chapters 7,8 in text. Summaries and reactions. Students demonstrate skill as participants in problem solving discussion groups. Students record observations of participation of others.	Lecture/Discussion, Chapters 9,10 in text. Summaries and reactions. Students form groups and prepare for final presentations. All members share tasks, record the work of the group till completion. Students take part in informed small group discussions, experimenting with different kinds of decision-making	Students demonstrate active, professional participation in presentation by their group. Students record all aspects of their participation in this group, from inception to fruition. Students observe participation of others.
Lecture/Discussion, Chapters 7,8 in text. Summaries and reactions. Students serve as leader or assist in leadership functions in problem-solving discussion. Students record observations of leadership roles in problem-solving discussion.	Lecture/Discussion, Chapters 9,10 in text. Summaries and reactions. Students exhibit and observe leadership as groups prepare for final presentation. Students take turns leading informal class discussions.	As leader or participant, students advance the goals of the group. During preparation and presentation, students observe leadership of others.
Students write full evaluations of their own group presentations. Students evaluate all other groups in essay exam. Students view video-tapes of Project II presentation.	Through lecture and discussion, students reach consensus on most important criteria for final presentation. Students compare presentations by guest speakers with student efforts. Students compare groups observed outside class with group work in class	Students write full evaluations of their own groups. Students demonstrate ability to synthesize observations, experiences, readings, and lectures by means of final, comprhensive exam.